



Innovative Partnerships Program

Liquid Galvanic Coating



"The system utilizes metal powders in a coating, which produces a galvanic effect when connected to the underlying rebar. Marlin Hanson, our chemist on this project, has successfully sprayed the coating mixture, which can also be roll-coated or brushed on as well. This new coating offers an easy to apply alternative to sprayed on zinc metal and 3M's zinc hydrogel product."

Art Ahlbrecht, VP of R&D
Cortec Corporation

NASA Galvanic Coating Offers Another Alternative

NASA developed this technology and conducted proof-of-concept demonstrations. The technology is a liquid galvanic coating, applied to the outer surface of reinforced concrete, to protect the embedded rebar from corrosion. The coating contains one of several types of metallic particles—magnesium, zinc, or indium. An electrical current that is established between metallic particles in the applied coating and the surface of the steel rebar produces cathodic protection of the rebar. The current forces a flow of electrons from the coating (anode) to the rebar along a separate metallic connection; this surplus of electrons at the rebar (cathode) prevents the loss of metal ions that would normally occur as part of the natural corrosion process. The technology is innovative because it can be applied (1) to the outside surface of reinforced concrete (most rebar corrosion prevention must be applied directly to the rebar) and (2) with a conventional brush or sprayer.

Benefits to NASA Missions

Adoption of the technology by chemical companies will generate significant royalties that will be invested by KSC into research and development projects. The technology could be applied to structures currently in place at NASA Centers to prevent corrosion of the steel rebar in concrete.

Measurable Impact

- NASA has nonexclusively licensed this technology to two companies: Cortec Corporation and Surtreat Holding LLC.
- Cortec conducted trials in 2004 and 2005 in Australia, France, and the United States. Cortec has developed a new phase-3 coating, which the company believes improves the potential of the original technology.
- Surtreat installed the Liquid Galvanic Coating System® at the U.S. Army NaHa Port, Okinawa, Japan. Project installation was completed in February, and final testing will take place in April and May 2007.

NASA success story

Worth Noting

- Technology acts as sacrificial coating on reinforced concrete to protect rebar.
- Coating applied to outer surface of reinforced concrete—not directly to the rebar.
- Application performed quickly by brushing or spraying.
- Low cost achieved with relatively inexpensive labor and materials.
- Protects surface for 10 years or more, resulting in reduced maintenance cost.
- Corrosion prevention achieved after construction is complete.

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Surtreat technicians installed of the Liquid Galvanic Coating system at the U.S. Army NaHa Port in Okinawa, Japan.

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